

# "This is Not Your The Coast Guard's Sur

**By Commander Douglas Henke,  
surface program manager,  
Integrated Deepwater System**

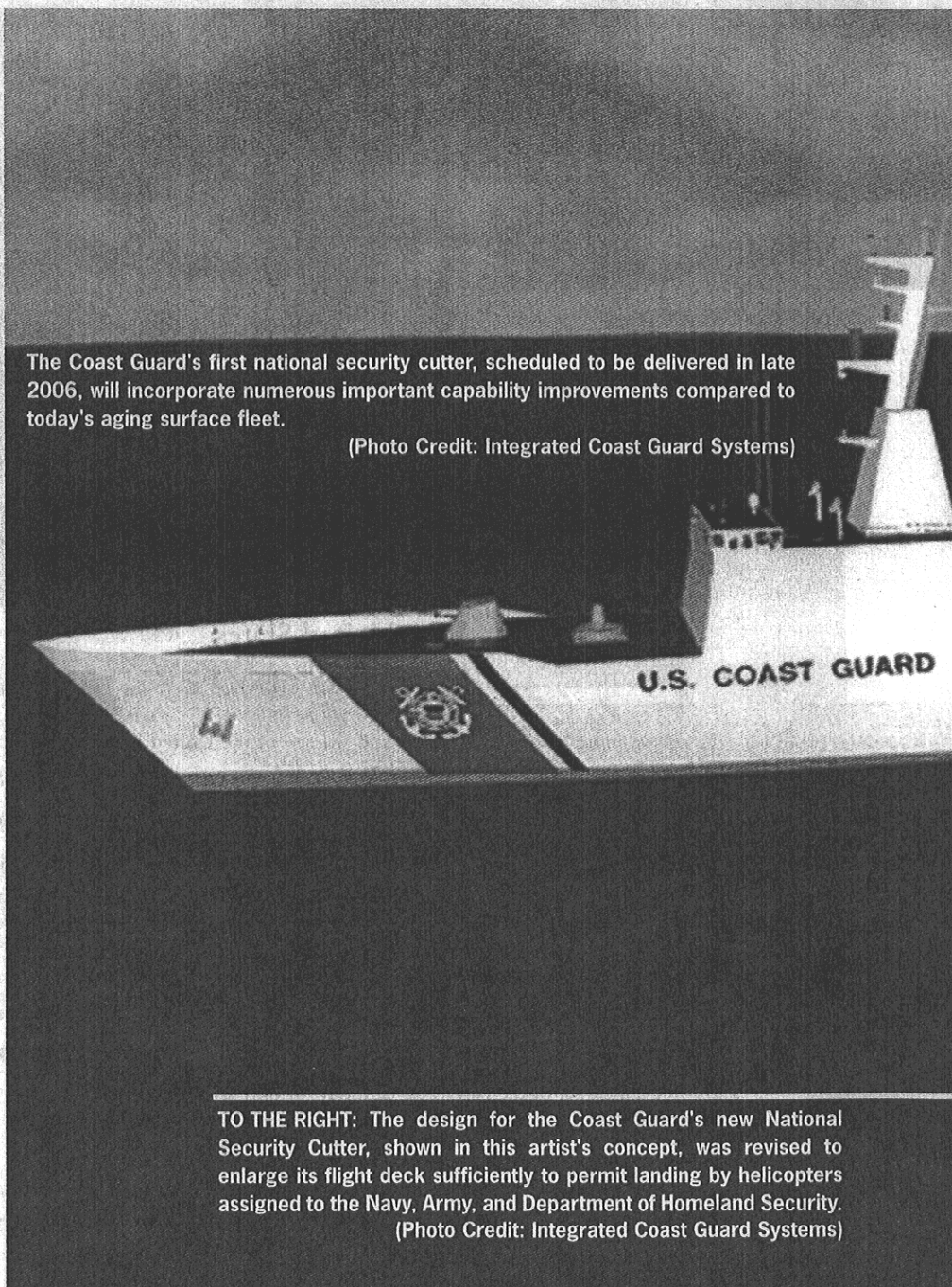
Few people serving in the U.S. military today will have the opportunity to experience the near-total recapitalization of their equipment and systems during the course of their careers. Yet, for the men and women of the U.S. Coast Guard, the Integrated Deepwater System (IDS) is well on the route to turn this vision into a reality.

Originally conceived during the 1990s, the Deepwater program calls for the progressive modernization and replacement of the Coast Guard's aging and technologically obsolete cutters, patrol boats, fixed-wing aircraft and helicopters. Deepwater's integrated, system-of-systems acquisition strategy provides for the low-risk transition to new platforms with improved capabilities—including unmanned aerial vehicles (UAVs) and highly improved systems for C4ISR (command, control, communications, computers, intelligence, surveillance, reconnaissance) and integrated logistics.

"The Coast Guard and the American people urgently need the Deepwater Program," said Secretary of Homeland Security Tom Ridge recently. "The Department of Homeland Security is thrilled with the progress the Coast Guard has made to date with Deepwater." In less than one year since the award of the Deepwater contract, the Coast Guard has orders to start design work on the National Security

The Coast Guard's first national security cutter, scheduled to be delivered in late 2006, will incorporate numerous important capability improvements compared to today's aging surface fleet.

(Photo Credit: Integrated Coast Guard Systems)

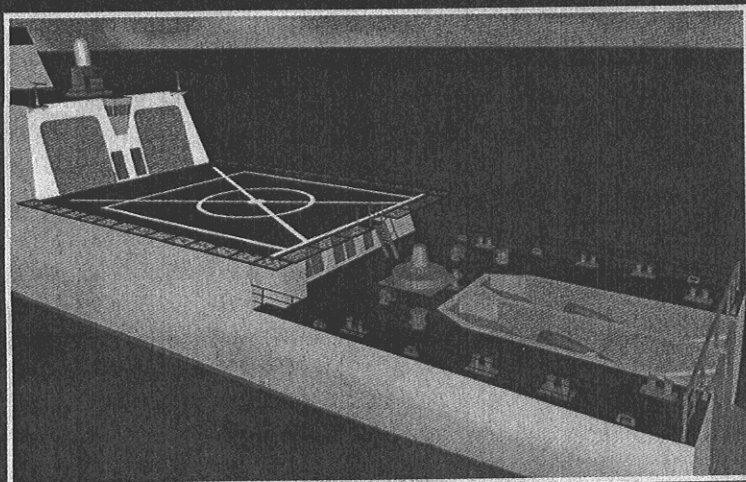
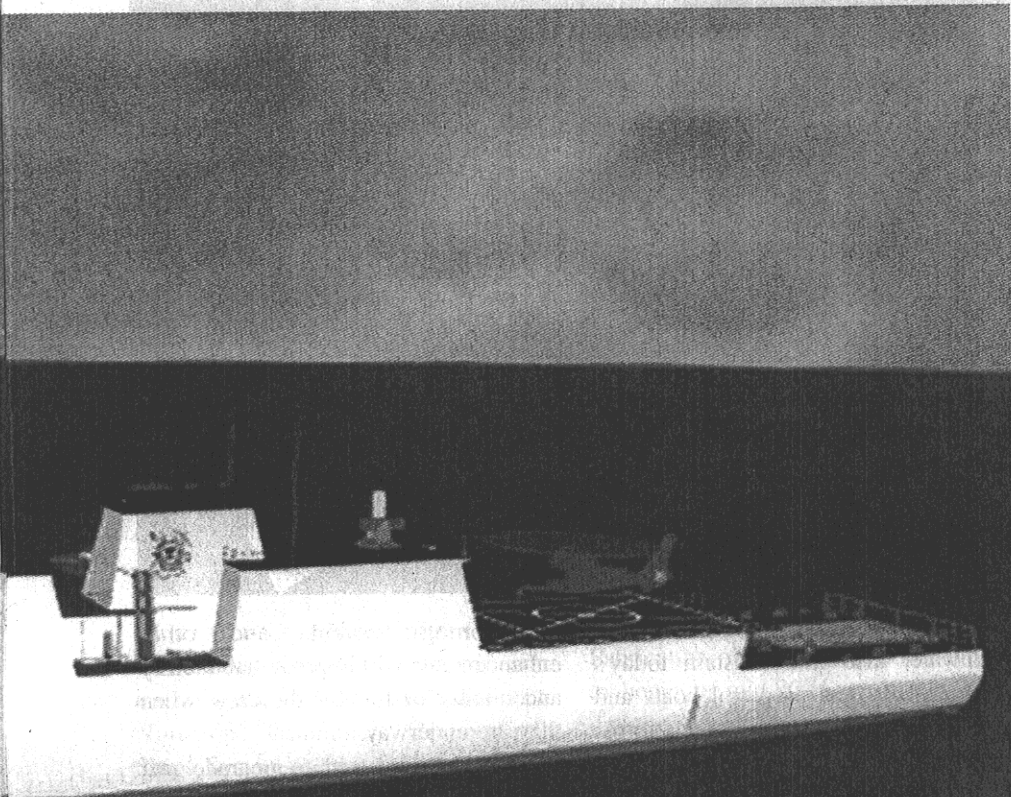


TO THE RIGHT: The design for the Coast Guard's new National Security Cutter, shown in this artist's concept, was revised to enlarge its flight deck sufficiently to permit landing by helicopters assigned to the Navy, Army, and Department of Homeland Security.

(Photo Credit: Integrated Coast Guard Systems)

# Parents' Cutter"

## face Fleet of Tomorrow



Cutter, has begun the modernization of the 110-ft. (33.5-m) patrol boats, and has initiated critical upgrades to selected communications systems for an aging legacy fleet.

Deepwater's more operationally and technologically effective platforms will boast increased range, endurance, stability, and mission hours—all at lower total ownership costs. Coupled with modern C4ISR systems, they will enable the Coast Guard to implement a layered, defense-in-depth strategy for maritime homeland security and perform its other traditional missions far more effectively.

This urgently needed recapitalization of the nation's maritime guardians will bring a new look to the Coast Guard's inventory of air and surface platforms over the course of Deepwater's planned 20- to 30-year program life—a recapitalization that will be especially apparent in the Coast Guard's active fleet of cutters, patrol boats, and associated small craft. When this modernization effort is viewed in the context of Deepwater's overall system-of-systems recapitalization program, the contrast with today's fleet will be striking. This is definitely not your parents' cutter!

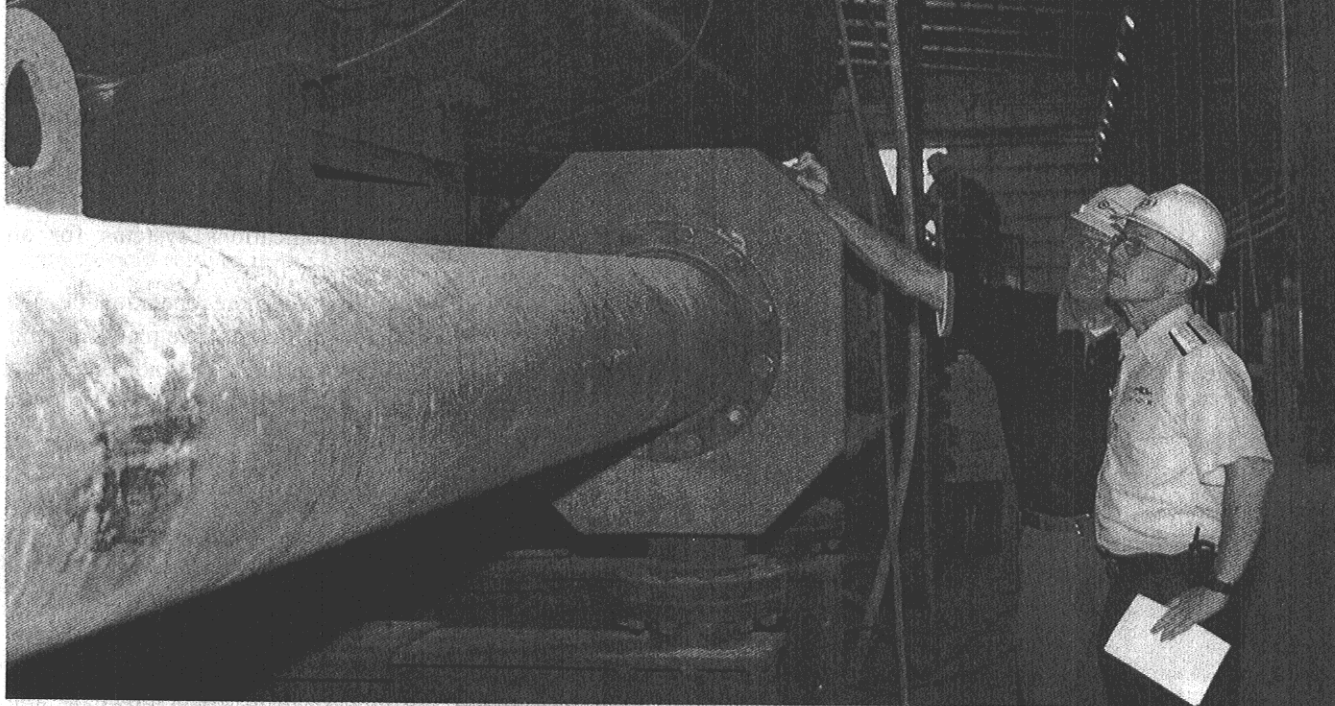
### Top Goals

Since Deepwater's June 2002 contract award to Integrated Coast Guard Systems (ICGS), a joint venture between the Lockheed Martin and Northrop Grumman corporations, the Coast Guard and its industry partner have developed a strong teaming rela-

## USCG Deepwater

All 49 Island-class 110-ft. (33.5-m) patrol boats will be converted to 123-ft. (37.4-m) vessels as a part of the Coast Guard's Integrated Deepwater System. USCGC Matagorda - shown here during an inspection by Rear Adm. Patrick M. Stillman, Deepwater's program executive officer - was the first 110 to enter Bollinger Shipyard in Lockport, La., earlier this year to begin the conversion process.

(Photo Credit: Integrated Coast Guard Systems)



tionship. Deepwater's top long-term goals in the surface arena are to: (1) design and develop three new classes of cutters (and their associated small boats) featuring higher reliability, ease of maintenance, improved operational effectiveness, and reduced manning-all at lower total-operating costs; (2) mainstream these new classes of cutters as integrated elements of the Deepwater System of Systems with continuous focus on Navy-Coast Guard alignment; and (3) decrease future operation and maintenance costs through the introduction of efficient and reliable assets.

For the near term, our primary thrusts center on the design and development of the National Security Cutter (NSC), conversion of 110-ft. (33.5-m) Island-class patrol boats to 123-ft. (33.5-m) craft to meet planned cost and delivery schedules, and production of the Short

Range Prosecutor small boat. Of note, Deepwater also must sustain today's aging legacy fleet of patrol boats and cutters until new Deepwater platforms reach the fleet.

Each effort is moving forward smartly. For example, this past February, the 110-ft. cutter USCGC Matagorda became the first of 49 Island-class patrol boats to enter the Bollinger shipyard in Lockport, La., to undergo conversion to a 123-ft. vessel with upgraded operational capabilities. Modifications include the fitting of a stern ramp for small boat launch-and-recovery operations. The Short-Range Prosecutor, a new seven-m boat, will add to the patrol craft's capabilities with increased speed, capacity, and improved communications. A new deckhouse, new berthing compartments, a new galley, an improved air-

conditioning system, and other enhancements will improve habitability and quality of life for the crew when they are underway.

The ICGS proposal to upgrade and convert Island-class patrol boats (first commissioned in 1986) is a result of balancing the Deepwater system's operational effectiveness against minimizing total ownership cost and adherence to system level cost targets. The conversion achieves an effective, affordable patrol boat capability enhancement and will extend the vessel's service life. The conversion program is not free of risk, however. Island-class hulls have taken a beating during long and arduous years at sea. Since fiscal year 2001, the class has experienced 17 hull breaches, and 22 of 49 hulls in the class have significant hull degradation-all requiring extensive emergency repairs. In addi-

tion to a strong focus on hull plate renewal during the conversion, support from Coast Guard experts (both during and after delivery) are essential for ensuring the conversion has enduring benefit. As the conversion of Island-class hulls continues, ICGS and the Coast Guard will continuously evaluate its cost effectiveness, feasibility, and desirability.

Since the 110-ft. Island-class patrol boats are a mainstay of many critical Coast Guard operations, it is imperative that the Coast Guard to keep the Island-class conversion program on schedule. With up to five 110s out of service at any time, Coast Guard fleet operators face a noticeable reduction in the number of surface assets available to them to prosecute high-priority missions. Projected conversions schedules also figure significantly in the personnel area. Crew assignments, training, and rotations must be timed carefully to enable smooth manning as upgraded 123s are returned to service.

## Three Classes of New Cutters

The Coast Guard awarded two contracts in April totaling \$129 million to Northrop Grumman Corporation's Ships Systems sector for initial development and delivery of the first

## Deepwater: The Coast Guard's New Look

The Integrated Deepwater System's recapitalization of the Coast Guard's surface platforms has progressed in a number of key areas during the past year:

- Two contracts were awarded to Northrop Grumman's Ship Systems Sector in April for the detail design and purchase of long-lead materials to enable delivery of the first National Security Cutter in late 2006.
- Four 110-ft. Island-class patrol boats have entered Bollinger Shipyard in Lockport, La., for conversion to 123-ft. vessels. All 49 boats in the class are currently schedule to be upgraded.
- The prototype for Deepwater's new seven-meter Short Range Prosecutor (SRP) small boat was delivered and conducted underway trials in April. It will add to the 123-ft. patrol boat's capabilities and also will be deployable on all new classes of cutters. Delivery of the first production SRP to the fleet will occur late this year with the Matagorda.

National Security Cutter. The contracts call for the completion of the designs for the cutter and the procurement of components that have a long production time. The detail design effort will be conducted at Northrop Grumman's New Orleans Engineering Center of Excellence, where the National Security Cutter's preliminary and contract design phase was recently completed. Fabrication of the first NSC is planned to begin in mid-2004, with the ship's delivery scheduled in late 2006.

In addition to the NSC, two additional classes of cutters - the Offshore Patrol Cutter (OPC) and the Fast

Response Cutter (FRC) - will be designed from the keel up. Each of the new cutters will be more capable and include reconfigurable spaces that can be tailored for specific missions. Crew size, the most significant contributor to a ship's total life-cycle cost, will be reduced through a variety of means, including a greater reliance on automated systems. Design requirements will be incorporated based on human-centered engineering principles, lessons learned from an ICGS cutter-crewing analysis, and past experiences in recent Department of Defense acquisition programs and studies.

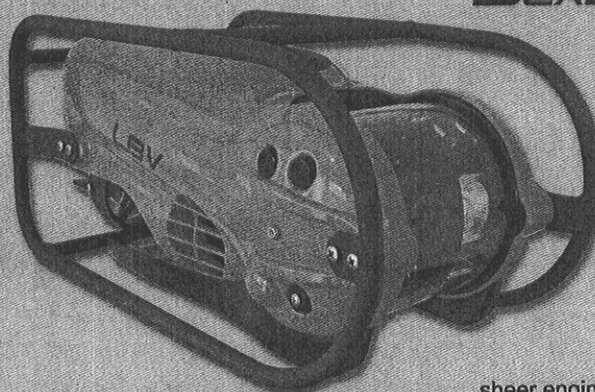
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## USCG Deepwater

Other planned improvements include large hangars that will accommodate a mix of helicopters and UAVs; a 360-degree visibility bridge to enhance operational awareness and safety; dual-gender berthing accommodations to enable more flexible crew assignment; and improved seakeeping to enable small boat and air operations in higher sea states.

The NSC's performance specification includes multiple requirements for limited self-defense capabilities including operating in a low-threat environment, firing warning and disabling shots against targets of interest, engaging surface threats such as high-speed patrol craft, and employing self-defensive measures against anti-ship cruise missiles. ICGS has proposed the incorporation of a Bofors Mk-3/57mm intermediate caliber gun into the NSC design to meet these requirements. Capable of firing 220 rounds / min., the gun is based on a model in service with NATO allies for more than 10 years.

Deepwater's aviation plan also calls for the Coast Guard to introduce its first UAVs into its inventory by mid-decade. In February, Bell Helicopter was awarded a contract to commence concept and preliminary design work on its Eagle Eye vertical takeoff-and-landing unmanned aerial vehicle (VUAV).

VUAVs will be deployed aboard the NSC as well as on OPCs and are proposed for deployment on the Famous-class medium-endurance legacy cutters. The VUAV's initial operational capability, projected for 2006, is timed for the delivery of the first NCS. Up to four Eagle Eyes could be deployed on each NSC or OPC, or two may be deployed jointly when a helicopter is embarked.

Each VUAV will be capable of accepting modular mission payloads (forward-looking infrared/electro-optical systems, radar, etc.). With a planned endurance of 6.2 hours and a dash air-speed of 220 knots, the Eagle Eye will

substantially improve the NSC's detection, surveillance, and monitoring capacity and capabilities. This improvement to a cutter's search-and-surveillance capabilities will greatly enhance the process of classifying and identifying targets of interest-enabling important contributions to attaining maritime domain awareness in the quest for maritime homeland security.

### Drivers for Design

Several factors drive the designs for Deepwater's future cutters. With its projected annual funding now fixed at \$500 million (in fiscal year 1998 dollars) for the life of the program, cost is an independent variable in the program's acquisition strategy. Deepwater's Systems Engineering and Integration Team is responsible for monitoring the execution of the overall program and, based upon approved changes to a platform's design specifications, issuing individual delivery orders. Deepwater's program staff is constantly looking for creative ways to balance the twin goals of improving IDS operational effectiveness while minimizing total-ownership cost. In furtherance of the National Fleet policy agreement between the Navy and the Coast Guard, Deepwater's design teams will seek common technologies, systems, and processes critical to both the Navy's future Littoral Combat Ship (LCS) and the Coast Guard's future cutters. This cooperation and collaboration will enhance Deepwater's surface platforms' interoperability and compatibility with Navy ships.

The Deepwater program retains the flexibility to make design changes to the NSC, but the key to modifying its operational requirements in the most cost-effective way is to do so early in the design process. The NSC's design has been changed to adapt to post-9/11 realities. New features include improved detection and defensive capa-

bilities for chemical/biological/radiological weapons, an extended flight deck to permit the operations for a wider range of helicopters, and the possible introduction of a "SCIF," or special compartmented information facility so that the NSC can receive and handle highly classified intelligence data and communications using Navy-supplied equipment. All Deepwater platforms are being designed for greater ease of maintenance, logistics support, and higher reliability. The NSC's design engineers have set performance goals and reliability targets to achieve these improvements. Reliability assumptions drive budgets for manning, maintenance, and spare parts. For this reason, the Deepwater program cannot afford to have any disparity between a platform's projected and actual reliability.

More imaginative and innovative crewing concepts offer some of the most fruitful areas for significant reductions in total-ownership costs for all Deepwater air and surface platforms. The NSC will be the first optimally crewed Coast Guard cutter of its size and mission to put to sea.

Managing major recapitalization programs concurrently continues to be extremely challenging for Deepwater's surface team. There is, however, a tremendous sense of purpose and dedication in playing a crucial role as acquirers and providers of a new spectrum of surface assets that are desperately needed by the men of women of the Coast Guard. In this sense, we echo the words of Coast Guard Commandant Admiral Thomas H. Collins in his Commandant's Direction for 2002, "We are poised to transform our Coast Guard to meet the demands of the 21st century, confident in the enduring character of our service, strengthened by our core values of honor, respect, and devotion to duty, and renewed in our sense of purpose and commitment to serve America."